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EDITORIAL COMMENT

It's school time again, fall is just around the corner and we are on the downhill side of 1993. It makes one wonder where the summer went. Soon we will be holed up inside with more time to spend on our computers. It also means that it is time to do some computer house cleaning. Backup that hard drive, use a disk optimizer to defragment all the stuff we loaded on it this summer. Clean out that disk file drawer and think about adding that external drive with two 720K 3-1/2" disk drives, so we can cut down on the number of disk we have scattered around. All in all there always seems to be lots of work to do, especially with the computer.

RIBBON RE-INKING

It is also a good time to package up all those printer ribbons that have been stacking up and send them to CN80 to be re-inked. Yes, that's right, I said to be re-inked. Due to popular demand and to save all that plastic going to the landfill we are going to open up our re-inking facilities to all. We have been re-inking our own fabric ribbons and those of some of our friends for years. We know it has been quite a fad to use WD-40 on your existing ribbons to get a little more life out of them. But that is the worst thing you can do. Not from the stand point of the harming the ribbon, but WD-40 has a solvent in it that is used to displace water and dissolve other substances, it is the worst thing you could use on your ribbons because it can cause damage to your printer's print head. The ink used in the manufacture of good ribbons has a special lubricant built in to it that lubricates the pins of the print head as it is printing. We use the very best printer ink manufactured for re-inking our own ribbons and for re-inking other peoples ribbons. Thus prolonging the life of our printers.

September
1993

Most fabric ribbons can be re-inked dozens of times before the fabric wears out, and then the plastic cartridge is still in good working order, too good just to throw away. In which case we use a new ribbon to reload the cartridge.

The charge for re-inking your ribbons, regardless of type is $ 3.00 each, with $3 return shipping for 1 to 5 ribbons and $ 4 for six or more ribbons.

Check this out the cost of six DMP 130

ribbons is:	$ 5.90	$ 35.40
Shipping and Handling		4.00
		------.---
	Total	$ 39.40
Six Ribbons re-inked		$ 18.00
Shipping and Handling		4.00
		------.---
	Total	$22.00

You save $ 17.40 on six ribbons, or $2.90 or more on each ribbon.

Yes, we know that there are cheaper ribbons available on the market, and we have based our ribbon prices on the ribbons we sell. But our ribbons are the very best nylon fabric that can be bought. We too tried the cheap ribbons when we first started out using printers, but we found that the cheap ribbons have an inferior cotton ribbon or were poorly welded nylon and soon a hole was worn in where the weld would jam the ribbon. You also could not order less than six ribbons from many sources.

We hope that this new service will appeal to you because it is just one more way that CN80 can be of service to the TRS-80 user.

MISSING ISSUES

To change the subject we would like to tell our readers that we can no longer fill in your missing issues when you do not renew in time. For many years now if you missed an issue or even two, we would send you the missing issues when your renewal came in too late and missed the mailing of the current issue. The cost of mailing a single issue is $2 or more because we have to mail it first class. As you know our subscription rates are $24 per year or $40 for two years. It just simply takes to much of a bite out of our mailing budget to fill in the missing issues. This does not apply to the replacement issue lost in the mail. But please wait an extra week before calling that you did not receive the latest issue. We are happy to replace any missing issues caused by the Postal Service or our error and will continue to do so. At the same time we notify the local postmaster that you are not receiving your issues and try to find out why. Bulk mail being what it is, it can take from three days to three weeks to be delivered, and some times if the local carrier is in a bad mood it might not be delivered at all.

The imprint above your mailing label that says "FORWARDING & RETURN POSTAGE GUARANTEED" "ADDRESS CORRECTION REQUESTED" means under the postal regulations that even though this is bulk mail it must be forwarded to your new address if they have it, or returned to us intact and can not be destroyed. It costs us about $3.28 to have one returned, and 35 cents if we receive an address correction. It also costs you first class mail rates to have it delivered to your new address. In any event it seems that some postal carriers do not know that the the imprint means "DO NOT DESTROY" as they can to other bulk mail if it is not deliverable.

The whole point of this long explanation is that the magazine is not to be thrown away if the carrier finds he can not deliver it. But ----.

ANOTHER ANGRY COMPUTER USER

We ran across a comment in one of the many computer trade journals that we receive that we would like to pass on to you. To quote a recent comment by Ezra Shapiro in InfoWorld "There's the frustration of working within a business where conspicuous consumption isn't an option, it's a way of life. Further, it's forced upon you by vendors. Every day you're asked to replace perfectly good machines, throw away decent software and upgrade everything around you. Not because anything needs fixing, but because the industry survives by selling and reselling the same sorts of products to the same customers with only minor improvements. You're [we] are afloat on a sea of waste. In this environment, who wouldn't be angry."

HARDWARE HACKERS CORNER

COMPUTER FLEA MARKETS

by William F. Garbe

I've been in hardware hacker's Heaven (or Hell, depending on your point of view) for the past couple of months. Like many of CN80's readers, I've been concerned about what happens when my trusty 4P finally gives out, but now the problem is pretty well solved. The local ham radio fraternity sponsors a Hamfest and Computer Show every Spring; the main attraction being a huge electronics flea market with everything from antique tubes and WW2 military junk to studio video cameras and IC manufacturing equipment being offered. Hams use computers in a system called Packet Radio; I haven't figured what it is all about, but much of the bargain equipment has been modified for this use. I picked up my 4P there two years ago while looking for spare disk drives for my Model 1 system. I don't know how many of these shows there are around the country, but the hand-outs available listed a half dozen within a day's drive of Rochester this year-probably not all as big as this one.

Last year TRS80 pickings were pretty slim, but this year I hit the jackpot. I came home with another 4P, an early 4 with two 180K drives and a 15Meg hard drive, a later 4 with no drives, a dead Model-3, half a dozen 360K drives, and a pair of 3 1/2 in drives in a case with power supply---all costing me less than the $200 I had come prepared to shell out for a single system. So I have been busy swapping parts to put together my ideal system, and learning a few things into the bargain. The 4P was pretty straight forward , I cleaned it up and replaced the drives with 360K's (it already had the memory upgrade) and it works fine.

MODEL 4 UPGRADES

The Model 4s have been a bit more educational; they were part of some sort of network system and, connected to the I/O bus, had a small Tandy board featuring a large square Corvus 3E-2024 chip, among others. Anyone know what they are all about, or can use them? At any rate I found that the boards and their wiring harnesses could be disconnected and removed without any effect on the computer's operation. Only problem was that the keyboard had a bunch of dead keys, so I swapped the "clustered arrow" keyboard from the other 4 for the dying Alps keyboard. Then I replaced the drives with half height 360K's following the instructions that CN80 has published several times in the past, and added the memory upgrade and internal Romclock chips from CN80-no problem.

Next I hooked up some external drives(a 360K and a 720K in the external case/power supply) and learned about the SYSTEM, SYSGEN, and DEVICE commands in order to access them. Finally I plugged in the hard drive and spent a frustrating week-end (without any documentation) figuring out how to format it with my TRSDOS 6.2.1 initialization disk. I finally got my VISICALC files copied onto it, but found that a large spreadsheet won't load into memory any faster from the hard disk than from floppies -phooey! By now I decided that I liked the green screen of the driveless 4 better than the B/W, so I opened both computers up to try swapping screens. Turns out that the connectors to the control board are wired differently, so I had to swap the wiring harness with the contrast & brightness controls too. Then I had to cobble up a new power supply connector to fit the 65W board, which has different pins from the 38W board.

Finally, my ideal system was up and running; at last I could back up data disks to 5 1/2 or 3 1/2 disks with no trouble, and I had lots of spare parts. At least every thing was fine until my granddaughter came over on Father's Day and played 13 Ghosts on it. After a while the game wouldn't run right and then the computer locked up. Next day I found the (unrepairable clustered arrow type) keyboard had died. It was OK when lying loose, but everything went blank when it was flexed. Time to learn about rejuvenating the original Alps keyboard!

KEYSWITCH REPAIR-THE BASICS

I hooked up the remains of the driveless Mod4 to use as a keyboard test bed under ROM BASIC, put the Model 3 keyboard in the "good" 4 so I could use it in the meantime, and started looking up keyboard repair articles in old CN80's. I tried the Freon contact cleaner technique and managed to get all but one of the dead keys working, so I prepared to extract the stubborn one. I invested in a Radio Shack de-soldering iron and found it to work like a charm: much better than a separate solder sucker or braid. Removal of the cap and keyswitch went pretty much as previous authors have described, but I was surprised at the construction of the (4 pin ALPS) keyswitch itself.

The operating part of the switch looks like a miniature plumbers plunger: a white rubber bell on a short shaft. In the center of the bell is a small black disk of conductive rubber which is pressed against two raised dimples on the contacts at the bottom of the switch when you push the key down. A close examination of the black disk with a magnifier reveals two tiny dots which match up with the contact dimples. I suspect that what happens to these keyswitches is that the conductive rubber eventually breaks down (fatigues) where the contact dimples repeatedly deform it and the resistance goes up in that small area. If so, rotating the plunger when re-assembling the switch, so that fresh rubber contacts the dimples, should make it good as new!

I cleaned off the dimples with a light rub of a pencil eraser (very lightly-they may have a very thin flash coating of gold to prevent corrosion), blew out any dust, inserted the plunger rotated at right angles to its original orientation, re-assembled the switch and soldered it back in place. It worked, by golly! So I put the keyboard back in the "good" computer and booted it up. Oh Oh!! Most of the keys "revived" with Freon were dead again; LSDOS must be fussier about key contact than ROM basic. So out comes the keyboard again and I remove a couple more keys. This time I got out the digital multimeter to measure the contact resistance. The two bad (but previously restored with the Freon treatment) keys measured about 1200 and 600 ohms in the closed position. With the contact dimples cleaned and the plunger rotated 90 deg the resistance dropped to 120 ohms in both cases. Anyone know what a fresh unused keyswitch measures?

ADVANCED KEYBOARD REJUVENATION

Back in the computer, these two keys now worked fine, but a few more were intermittent: sometimes they needed a couple of pushes to work. By now I was getting lazy, so left the keyboard in place, unplugged the computer, popped the caps off the offending keys, and just stared at the exposed switches thru a magnifier. Externally, the moving part of the switch is a plastic cylinder with a cross shaped extension on top to which the cap clips. Close examination reveals two small holes just beyond the arms of the cross--Hmmmmmm!!! I found a long needle and poked it gingerly down a hole; felt the metal coil spring surrounding the plunger shaft, then the rubbery plunger bell. Aha!!! Found another needle for the opposite hole, gave the needles a couple of flicks so as to rotate the plunger bell (if it would rotate), removed the needles and powered up the computer. BY GOLLY, IT WORKED!!! No more intermittents from that key! So I spent half an hour tracking down and fixing the rest of the intermittent keys, all with the keyboard in place, then put the cover back on, put in my Scripsit Pro disk and started typing this epistle. Got half way thru and discovered, when I tried to save the text to disk, that the CTRL key was dead as a doornail. I hadn't discovered this earlier, since it doesn't put anything on the screen. Fortunately the @ key serves as a backup, so I could save the text, turn off the computer, and revive the CTRL key with the needle treatment without opening the computer again.

Since this procedure is so easy, I would like to point out a few things. First, I have only tried this on a single ALPS keyboard with four pin keyswitches. I don't know if they are all the same inside, or what is inside a two pin ALPS keyswitch, or a MAXI keyswitch. Since my 4P's are working fine, I don't plan on fooling around with their keyboards. I strongly urge anyone who would try this to actually remove and open up a switch to see how it is constructed before poking needles inside. Second, turn off and unplug your computer. If everything is in order, your keyboard sees only 5 volts thru an 820 ohm resistor, but who knows what's waiting to bite you if something is screwed up.

So there you are; a few problems, a few solutions, and hopefully a few ideas for more experienced hackers to play with.
-Bill Garbe

A VISIT WITH DAVID GOBEN

by David Goben

GOT THE DATE?

I'll be the first to admit that I am infatuated by details. This being the result of teaching myself how to learn. While growing up, I loved school, but was incessantly bored with it, because the teachers did not just provide you with the opportunity to learn something, but they drilled it into your head, over and over. Thus when a fresh subject was introduced, I latched onto it and absorbed it like there was no tomorrow. But when they "taught" it to us again, and again, I became bored and ignored the lessons, until something new was introduced. Thus I always aced my tests, but my mind was always numb by the time homework was assigned, that I seldom did it, or if I did, it was in those last few moment before the bell rang, and each time managed an "A". Unfortunately tardy or absent homework did not score so well, thus my grade average moved more toward a "C" than an "A".

To remedy this situation, I realized that somehow I must make these (in my mind) senseless drillings interesting. How I managed to do it was to not just memorize dry facts to be parroted on an exam, and then duly forgotten, I instead dissected each subject, squeezing from it as much information as I could. Because of this, my view of science, history, language, and mathematics is much broader and more entertaining that most of my fellow students. Also, it resulted in becoming fascinated by trivia, long before such things became fashionable. As brief examples, I find it hard to accept that 15th century Europeans thought the world was flat when it was widely known and accepted that a single degree of longitude was wider at the equator than it was in the north. This alone gave me the clue that it was well known, long before Christobol Colon (Columbus) was born that the world was round. Fortunately for them, however, he and they believed that Marco Polo's Eurasia stretched much further eastward, and that the distance in a degree of longitude was shorter than what it actually was. Thus when the Americas were rediscovered, land was found exactly where they expected it, except that the East Indies should have been reached instead of the New World.

Another bit of trivia revolves around the whole CFC debate (chlorofluourocarbons). Even today, you always see aerosol cans boldly announcing that they contain no CFC's. Right. People, CFC's have been absent from aerosols since 1987, except for such things as asthma inhalers and air conditioners. But let's face facts; the ozone "scare" does =not= exist. And it has been proven, but bandwagonning ecologists (and the more populous self-styled, though unlearned fad-happy people who just claim to be among those environmentalist "seeking a safe, CFC-free world") would have you think otherwise. Did you know that there is absolutely =no= evidence that the so-called ozone hole over the South Pole actually exists? The "pictures" you are shown in magazines and on television are just computer-generated graphics of what certain people =estimate= that it looks like. The rise and fall of ozone is a natural thing. Indeed, in 1956 when CFC's were barely in use, the same sort of drop we are recording now was recorded then (and interestingly, increased again right along with our increasing usage of CFC's). Ozone is produced in the stratosphere, where it is uncommon for CFC's to reach. They are broken down when UV-C photons collide with those that are bound by a CFC. But for every UV-C photon that does manage to collide with a CFC-bound ozone molecule, there is only about 136 million oxygen molecules for every CFC. Even if the entire ozone layer were to suddenly disappear, the UV-C photons would still not reach the surface, because they would collide with oxygen molecules, which would result in an ozone molecule being formed about 10 kilometers above the surface. Trivia note: Did you know that the world CFC production is currently at 1.1 million tons annually, of which 750,000 tons of that is chlorine. And did you know that TWENTY times that amount is produced by the passive outgasses of volcanoes? Even more, did you know that the place in Antartica where these so-called anti-CFC environmentalists measure the ozone layer is 15 kilometers =downwind= from an active volcano? Can you spell "idiots"?

These two subjects are just a prelude to my next subject: computing days of the week. Though postulating how to do it is very simple, the facts and history surrounding it are fantastic. Therefore I though I would veer from my normal approach of just supplying dry facts, and share with you how =I= see a subject that I normally share with you, though by then with much less detail.

A reader recently complained that they were having trouble computing the day of the week. Well, to understand how to do that, you must be able to compute the day of the year. And to do that, you must be able to compute leap years.

The Julian calendar of 325 CE (Christian Era), was adopted to correct the lagging calendar that previously had specified just 365 days in a year. This new calendar estimated 365.25 days, thus introducing an extra day every 4 years, which was added to the end of February. Thus, from the old calendar, a date such as January 6, the historical birthday of Jeshua bar Yosef (Jesus, 7 BC), and the date on which the Eastern Orthodox Church still celebrate his birth, was in 325 suddenly corrected to March 21st; the Spring Equinox.

The problem here is that the year is not exactly 365.25 days long, but is in fact 10 minutes and 48 seconds shy of that. To remedy this, Pope Gregory XIII, who is probably more "famous" for his public Thanksgiving for the massacre of Protestants in Paris on Saint Bartholomew's Day in 1572, set the calendar straight. Energetically sponsoring the movement of intellectuals who, over the course of the last century sought to correct the calendar, in 1582 he ordained that October 4 would be followed by October 15, so that, as the solar calendars required, the Spring Equinox would again fall on March 21st. To prevent the 11-minute a year discrepancy, the Gregorian calendar would omit the leap day from years ending in hundreds, unless they were divisible by 400.

Unfortunately, because this reform came from Catholic Rome, Protestant England and the American Colonies refused to accept this new Gregorian calendar. It was not until 1752 that they were persuaded to change. By then, the old style calendar they used began on March 25, which marked the beginning of the year, which is to say that the year 1751 did not end until March 24. The new style calendar began the new year on January 1. Thus when the required 11 days were finally added by the Protestants, and the beginning of the year was moved to January 1, George Washington's birthday moved from February 11, 1751 of that year to February 22, 1752. Talk about confusing people!

With this in mind, it seems as folly that so many people are still arguing over whether the year 2000 will have a leap year or not. After all, the year 2000 is divisible by 4, which would make it a leap year. However, it is also divisible by 100, which would not make it a leap year. However, again, it is divisible by 400, which would make it a leap year. And so it is. Except in Russia. There, the year is considered to be 365.24 days long. Thus every year divisible by 4 is a leap year, except those divisible by 100. The only thing missing from their calculations is the 400 year factor. Thus in Russia, February 28, 2000, will be followed by March 1, whereas in the rest of the world that has adopted the Gregorian Calendar, it will be followed by February 29th. Unless they have made adjustments since the Soviet Union dissolved into its Independent Republics.

Regardless of what our Russian brothers think, we have adopted the new calendar that is 365 days, 5 hours, 49 minutes, and 12 seconds long. Actually, it is a small fraction of a second off from this, as some of you may have realized when the world clocks were adjusted by one second in the last year or two.

But how did I come up with such a precise figure? Well, if you begin with a figure 365.25 days as a starting point, and then figure that every 100 years there is not a leap year where there would normally be one, we would thus subtract 1/100th of a day from the base figure. Therefore by subtracting .01 (1/100th) from 365.25, we arrive at 365.24 days in a year. Then, if we make years divisible by 400 into leap years, we would then add back 1/400th of a day to our figure. Thus, adding .0025 (1/400th) to 365.24, we arrive at a figure of 365.2425 days, which translates out to our 365 day, 5 hour, 49 minute, and 12 second figure.

Yeah, David. This is really nifty, but how can I use it? We would use it to compute days of the week. But let us first compute leap years and the day of year. To compute if a year is a leap year, divide it by 4, 100, and 400. If it is evenly divisible by 400, it is a leap year, no question. If that fails, we see if it is evenly divisible by 4. If it is not, then it is =not= a leap year, no question. However, if it is, but is not evenly divisible by 100, then it =is= a leap year.

The Model 4 BASIC language has a MOD (modulus or modulo) operator that make integer arithmetic easy. Model I and III users will require a bit more math. Because the program listing in the back of the magazine uses the Model 4 MOD operator, we will demonstrate here using the I/III conversion, so that revising the program listing for I/III use will be easier.

If we have an integer variable called Y that contains the year in question, if we find that Y minus 4 time the integer result of Y divided by 4 is null, then we at first figure the year to be a leap year. Thus:

```
10 DEFINT A-Z:DIM MD(12)
20 INPUT"YEAR";Y
30 L1=Y-FIX(Y/4)*4
```

In this case, the variable L1 is non-zero if the year is not a leap year. Now let us figure years being divisible by 100 and 400:

```
40 L2=Y-FIX(Y/100)*100
50 L3=Y-FIX(Y/400)*400
60 L4=0 ’accumulator
```

Now all we have to do is figure that if L3 (division by 400) is zero, then it will be a leap year:

```
70 IF L3=0 THEN L4=1:GOTO 110
```

We then figure that if L1 (division by 4) is non-zero, then the year is not a leap year:

```
80 IF L1 THEN GOTO 110
```

Finally, we figure if L1 and L2 (division by 100) are both zero, then the year is not a leap year:

```
90 IF L2=0 THEN GOTO 110
```

Finally, since we now can assume that L1 is zero and L2 is non-zero, we can then further assume that the year is indeed a leap year:

```
100 L4=1
110 ’COMPUTE DAY OF YEAR
```

The next step is to figure the day of the year. We can do this easily by using the MD() array we defined earlier:

```
120 FOR X=1 TO 12
130 READ MD(X):NEXT X
140 DATA 31,28,31,30,31,30
150 DATA 31,31,30,31,30,31
```

We now apply our L4 result to February:

```
160 MD(2)=MD(2)+L4
```

Next we can compute the accumulated month days by using:

```
170 MX=0
180 INPUT"MONTH ( 1 - 12 )";M
190 FOR X=0 TO M-1
200 MX=MX+MD(X)
210 NEXT X
```

We then obtain the current day of the month:

```
220 PRINT"DAY ( 1 -"MD(M)")";
230 INPUT D
240 MX=MX+D-1
```

Notice in line 240 that we subtracted a day. This is for later modulus division when figuring days of the week, using an offset of zero. We next figure in the the number of days from all previous years:

```
250 MX=FIX(MX+Y*365.2425)
```

We then figure the day of the week by performing modulus division on our accumulated value by 7:

```
260 MX=MX-FIX(MX/7)*7
```

What results is a value from 0 to 6, corresponding respectively with Sunday, Monday, Tuesday, etc.

Program listing One is a Model 4 program that will compute the day of week. Type it into Model 4 BASIC (or modify it using the examples of modulus math demonstrated here to work on the Model I/III), and RUN it. Answer the prompts with the YEAR, then MONTH, and the DAY. It will then display the current day of the week. For example, if you answered the prompts with 1993 for the year, 8 for the month, and 22 for the day, the program would display the

result:
Day of Week for August 22, 1993: Sunday

Program Listing Two is the same program, but written in the language C, for all those C programmers out there. Notice that though it is much longer, it is so due to using a lot of comments and white space. Also notice that it requires the LONG/LIB (and LONG/NDX) files, described in CN80 6.5 (and available on the previous Disk Series Disk, if I'm not mistaken). LONG/LIB provides long integer support for values from 0 through 4,294,967,295. LONG/LIB will also be available, but enhanced and expanded, with Release 2 of Model 4 Small C, which will be available soon. To compile it under Model 4 Small C, type the program into a text editor, such as Mark Reed's ED-IT program, or TED, which is supplied on LS-DOS 6.3, and save it to a file called DAYWEEK/C. Next compile it using the following commands, assuming that the DAYWEEK/C file is on Drive :1:

```
SCC DAYWEEK:1 -A -P -L2
SCCOPT DAYWEEK:1 -M
MAC DAYWEEK:1 -NM
SMLNK DAYWEEK:1 LONG/LIB C/LIB
```

This creates a program called DAYWEEK/CMD, which you can run from the DOS Ready prompt. It will prompt you exactly like the BASIC program.

The crown of this article is Program Listing Three, which is a C program that emulates the machine language CAL program found on both my Model III LDOS and Model 4 System Utilities packages. If you do not have a Model 4 C compiler, such as my Model 4 Small C package, the next Disk Series disk will have the executable version on it, CAL/CMD.

If you wish to compile it yourself under Model 4 Small C, be aware that it requires the LONG/LIB and LONG/NDX files previously mentioned for Program Listing Two. With this neat stuff handy, you would first type the program into a text editor, such as Mark Reed's ED-IT program, or TED, which is supplied on LS-DOS 6.3, and save it to a file called CAL/C. You would then compile it using the commands (and assuming you saved it on Drive :1):

```
SCC CAL:1 -A -P -L2
SCCOPT CAL:1 -M
MAC CAL:1 -NM
SMLNK CAL:1 LONG/LIB C/LIB
```

And this will produce CAL/CMD. You would use CAL/CMD like you would my commercial version. If you simply enter CAL, it will display the current date, and a calendar of the month, with the date marked on it. If you enter a specific date, a calendar of that month will be displayed, with the date marked. For example, if I were to enter the date for August 22, 1993, I would enter:

```
CAL 8/22/93
```

And CAL would respond with:

```
          Sunday, August 22, 1993

               August 1993

 Sun Mon  Tue  Wed  Thu  Fri  Sat
--------------------------------------------------
  1   2    3    4    5    6    7
  8   9   10   11   12   13   14
 15  16   17   18   19   20   21
<22> 23   24   25   26   27   28
 29  30   31
--------------------------------------------------
```

You could have also entered the year as 1993, or used any date from January 1, 1980 through December 31, 2011. Notice that the leap year calculations use the formulas used by the Model 4 Disk Operating System. If you would like to use dates outside this 1980-2011 limit, you will have to modify CAL's calculation to be more like those shown in Program Listing Two.

SMALL C RELEASE 2

Model 4 Small C, Release 2 will be available by the time you read this. The entire manual has been revised, reorganized, expanded, and enhanced. All the programs in the package have also been enhanced. Model 4 Small C can no longer be considered a simple Small C product. It is almost Full C, except for support of the "typedef" keyword (which is easy to emulate through #define statements, and demonstrated in the new manual), and floating point support. Long integer support is now provided with a much-enhanced 32-bit math library, much better than that described in CN80 5.6. Small C now supports enumerated types, structures, unions, and about everything in between. But it is still easy to use. The optimizer even optimizes more. So if anyone who stuck their nose up before because of the the fact that it is called Small C, they do not have much room for doing so any more.

I believe that users who already have the previous release of Model 4 Small C can obtain the new release by returning their complete, original package, and paying for the updated manual, which will be accompanied by 4 disks. I also believe that the price of the package went up slightly, due to the much larger manual.

Model 4 Small C is not so Small anymore. Contact CN80 for details. An "official" announcement will be made next month.

MAGICDRAW FONTS

A number of queries have been directed to me, and some have been passed to me from those who noticed discussions of this subject on the national bull-a-ton boards. The questions usually center around why I chose to define my own font format. A couple of them even chastised me for "ripping off" DotWriter fonts. Truth is, folks, I =did not= rip off DotWriter fonts. Truth is, most of the DotWriter fonts you see available from these bull-a-ton boards were "ripped off" from other packages, most notably PrintMaster. Indeed, I did derived most of the fonts for MagicDraw from other sources: PrintShop, New PrintShop, PrintMaster, NewsRoom, a few from PostMaster, and 3 of the small fonts from DotWriter. Why did I not just leave them in their original format? And why do I not make them public domain, even if the original format I borrowed them from may have been public domain? I did not because in most cases, the format in which they are stored under =is not= public domain. For example, the actual font, or type style itself may be public domain, but the format under which they are stored is not. One might well ask why these same fonts are stored under different formats? Because the storage format is set up in a way that makes it most usable by the program. After all, you do not use DotWriter fonts with PrintShop, because they both use different methods of character access. For example, DotWriter uses a "vertical" storage method, and PrintShop uses a "horizontal" storage method. Likewise, MagicDraw fonts are stored in a way that makes them very easy to use from MagicDraw's method of storage and retrieval. Secondly, why don't DotWriter and PrintShop use the same font format? Because their access requirements are different, and the fact the PrintShop fonts are meant to be used only with the PrintShop program, and DotWriter fonts are meant to be used only with the DotWriter program. The same with MagicDraw fonts. And PostMaster. And PrintMaster. And NewsRoom. This method of using different storage formats also shields one from legal entanglements. As such, although I might not mind if someone writes a program that can use my MagicDraw fonts on their own personal program, or if they make their program public domain so that other people who use MagicDraw and want to use their MagicDraw fonts with it. But if someone starts manufacturing MagicDraw fonts without receiving permission from me, they will most certainly be hearing from a very cross lawyer. Why? Because I own the method that the font is stored under. So what if the font itself is common? The method it may be stored under is not.

PASSING CODES TO THE SCREEN

One reader recently asked how to pass a special code (hex 15, decimal 21) to the screen under a JCL file. Easy. Enter the following five lines from the DOS Ready prompt:

```
BASIC
OPEN"O",1,"DEC21/ASC:0"
PRINT#1,CHR$(21);
CLOSE 1
SYSTEM
```

This creates a file called DEC21/ASC that contains the required code. To copy it to the screen from a JCL file, from within your JCL file, insert the following line:

```
COPY DEC21/ASC *DO
```

This command will copy the code right to the display device (*DO; Display Output).

Well, until then, Happy Computing!
-David Goben

(Editor's Note) David Goben is the librarian

for the File Cabinet Model 4 Public Domain Library, he is also the librarian for the PostMaster Icon Library and did the conversion of the icons in that library using a utility supplied by David Miller author of PostMaster and with Mr. Miller's full permission to use the PostMaster format. David Goben is paid a royalty on every sale of those libraries in exchange for his work and support of the files in those libraries. The original File Cabinet collection was purchased by Computer News from Mr. Tim Sewell under contract terms in which complete ownership of the collection, including all backup copies and future copies became the property of the Construction News Publishing Co., publishers of Computer News 80. The File Cabinet Catalogs and The PostMaster Icon catalog are owned and copyrighted by Computer News 80.-Ed.

4P ROMCLOCK INSTALLATION

by Kim J. Lake

On receiving my first ROMCLOCK package I had intended to install it into my Model 4P (catalog# 26-1080), but on cracking the 4P open I quickly discovered a few problems reconciling the instructions with my 4P which I will describe below. So I installed my first ROMCLOCK in my desktop gate array Model 4 (Cat.# 26-1069A) instead. This worked perfectly following the installation instructions for the Model 4D gate array (Cat.# 26-1070). Since that time I have gotten two more ROMCLOCK's, installing one in my backup Model 4 (Cat.# 26-1069A) and the other in my Model 4P (Cat. # 26-1080).

The first problem was that I wasn't absolutely certain whether my 4P was a gate array or non-gate array model so I ordered the Service Manual/Parts-list (p/n MS-2601080, cost $30.78 + tax, Shipping, & Handling) for the Model 4P from Tandy National Parts (900 East Northside Drive, Fort Worth, TX 76102 phone 1-800-442-2425). Fortunately, since I had intended to get the manual in any case I wasn't out any money when I discovered that the 2 versions of the Artwork/Parts lists furnished in the service manual didn't quite match the reality of my 4P. While the s/n and Silk-screen lay-out on my Mother-board (8709427 rev. PP3) seemed to indicate that I had a non-gate array version, the parts mine possessed seemed to agree more (but not completely) with the parts list of the gate array version. The installation instructions provided with the ROMCLOCK indicated that the Boot ROM of the non-gate array was in socket U70. This seemed to agree with the apparent location of mine though the part number was unknown to the author. In my 4P the Boot ROM is a 2732 4k x 8 PROM (Tandy part number 8075732). The Radio Shack Service Manual states that "..in the non-gate array version the Boot ROM is located in socket U44 and is described as 'IC, MCM68A322, Boot ROM (no part number listed)'. This certainly wasn't like mine or like that of ROMCLOCK's installation instructions' Author. Taking all of the above into consideration, I decided to proceed on the likely assumption that I possessed a non-gate array 4P.

The second problem was that when following the instructions provided in the package, the +ROMCLOCK+ chip would not easily fit into the Boot ROM socket (U70) without "riding-up" upon the chip immediately above it (U30). This problem is easily rectified by simply installing a Low Profile 24-pin DIP IC socket (Radio Shack Catalog number 276-1989) into Socket U70 and then installing the ROMCLOCK into it according to the instructions. Be cautious in piggy-backing the sockets as the pins are a bit on the fragile side. CAUTION: If you have a MODEM card installed you will not be able to use the extra socket as there would be not be enough clearance between the completed ROMCLOCK "stack" and the MODEM card.

The third problem I ran into was that my Boot ROM had some extra "plumbing" that would not work with the installation instructions for either version of the 4P; time to get out the Meter! On my Boot ROM (U70), pin 12 (which is ground) has a jumper wire going to pin 18 (which is bent up away from the socket). Pin 21 of U70 is bent up away from the socket and has a jumper wire which passes through a via (hole) in the Mother-board and is soldered to the trace which leads back to pin 18 of U70's socket. In step 8 of the previous

installation instructions you are told to run a jumper from pin 18 of the Boot ROM to pin 18 of U26. If your Boot ROM matches the description of mine, DO NOT DO THIS! You would be grounding out A11 (Address line 11)! This would not be good.
Model 4P (8709427 rev. PP3) Installation

1. Connect a jumper from pin 26 to pin 28 on the ROMCLOCK. This provides 5 volts for pin 28 of the ROMCLOCK.

2. Bend pin 20 of ROMCLOCK so it will not go in pin-hole 18 of the ROM socket.

3. Jumper pin 20 to pin 14 of ROMCLOCK. This provides a ground for pin 20 of the ROMCLOCK.

4. Gently, without disconnecting or breaking the existing jumper wires, remove the Boot ROM from its socket. You must move it to one side and raise it high enough to place the ROMCLOCK (and secondary 24-pin socket if you are using one) between itself and the existing board-mounted socket. You may find it necessary to extend these jumpers with a bit of wire. This will be U70 on the non-gate array version with a lay-out such as I've described mine has. The ROM should be marked as follows;

8332MAP
AM2732A-3DC
1983 AMD

and should have a sticker on it with the part number of 8075732.

5a. If you are using my 4-tier stack method, install the extra 24-pin socket into the board mounted (U70) socket, otherwise skip step 5a.

5b. Insert ROMCLOCK into the ROM socket(s) with pins 1, 2, 27, & 28 hanging over the end of the 24 pin socket(s). Pin 3 of the ROMCLOCK should now be plugged into pin-hole 1 of the ROM socket(s).

6. Carefully insert the Boot ROM into the ROMCLOCK socket such that it is aligned with the ROM socket(s) on the main circuit board. Note that pin 1 of the Boot ROM will be in pin-hole 3 of the ROMCLOCK socket which in turn is in pin 1 of the socket(s) on the main circuit board.

7. This completes the installation of the ROMCLOCK in a Model 4P with a non-gate array mother-board designation of 8709427 rev. PP3.

Whew! I didn't realize that this might turn into such a maze in explaining it. I hope that its easier to follow than it was to write. My apologies for so liberally plagiarizing some of the instructions from Duane M. Saylor, but one should never re-invent the wheel when it can be avoided.
-Kim J. Lake

TIPS ON USING MS-UTILITIES

by David P. Miller

CORRECTION

Using the MS-Utilities: Low Capacity Storage

The article printed last month (Computer News 80, Volume 6, Number 8, August 1993), contained inaccurate information. This was my error and not the editors of CN80. The paragraph that read:

If some of the files listed above do not appear on the list, don't worry about it. Now place your working MS-Utilities diskette in drive :0 (created according to the instructions in the MS-Utilities manual), a diskette with the MS-Utility programs in drive :1, and copy the MS-Utility programs with the following commands:

SHOULD HAVE READ:
If some of the files listed above do not appear on the list, don't worry about it. Now place your working MS-Utilities diskette in drive :0 (created according to the instructions in the MS-Utilities manual), THE DISKETTE CREATED IN THE ABOVE STEP in drive :1, and copy the MS-Utility programs with the following commands:

My apologies for any confusion caused by my error.

USING THE MS-UTILITIES WITH OTHER DOS VERSIONS

Although the MS-Utilities are written to run on TRS/LS-DOS Version 6.x, many people need to copy files from diskettes created under other TRS-80 Disk Operating Systems (DOS's). Examples are old diskettes with a mailing list, spreadsheet, or document file created under TRSDOS 1.3 (Model III), TRSDOS 2.3 (Model I), or LDOS 5.1.x (Models I and III). Other DOS's were available in abundance for the various TRS-80 models as well, but this author has never used any but the 'authorized' DOS versions and LDOS 5.1.x (which eventually became an 'authorized' DOS). For the remainder of this article, I will refer to LDOS 5.1.x as "LDOS" and TRS/LS-DOS 6.x as "LS-DOS" for simplicity.

Conversion of files from an LDOS diskette is easy; simply copy the file to an LS-DOS diskette and then process it as usual. Since LDOS and LS-DOS are 'directory-level' compatible, no additional effort is required beyond moving the files from one diskette to another before processing with MSCOPY or LFEOF.

Conversion of files from diskettes previously created by other DOS's becomes a bit more complex. Files stored on diskettes created by Multi-Dos, DosPlus, NewDos, or other DOS's distributed by third parties must be transferred to a diskette format compatible with one of the 'authorized' DOS's; a procedure that I cannot help with.

Once the files are placed on a TRSDOS compatible diskette, file transfer requires the programs REPAIR/CMD and CONV/CMD provided with LS-DOS and is fairly easy to perform.

CONV/CMD allows the LS-DOS user to read diskettes in TRSDOS 1.3 (Model III) format and copies the files to an LS-DOS diskette. REPAIR/CMD corrects an identifying marker in the TRSDOS 2.3 (Model I) diskette directory in order to allow LS-DOS to read it.

To move files from a TRSDOS 1.3 (Model III) diskette to an LS-DOS diskette, use the CONV/CMD conversion program. Place an LS-DOS system diskette created for the transfer with the system files ("/SYS") and CONV/CMD in drive :0 and the TRSDOS 1.3 diskette in drive :1. Use the command:

```
CONV :1 :0 (VIS,QUERY)
```

and CONV/CMD should begin displaying filenames and asking if they should be copied. Respond to each prompt as appropriate, and when finished, the files will be available for processing by MSCOPY and/or LFEOF using LS-DOS. Additional parameters that can be used with (or in place of) those shown are "DIR" to determine which files are present on the TRSDOS 1.3 diskette; "INV" to obtain files marked as invisible; "NEW" to avoid overwriting existing files on the LS-DOS destination diskette; and "OLD" to obtain only files already on the LS-DOS destination diskette.

To copy files from TRSDOS 2.3 format diskettes you must run REPAIR/CMD. Use the command:

```
REPAIR :1
```

After REPAIR/CMD has corrected the marker byte in the directory, you should be able to read the diskette using LS-DOS.

I have used REPAIR/CMD several times with no apparent problems either in reading the original diskette on future occasions using CONV/CMD, or in reading the diskette with the original DOS/machine that created it. However, if you have the original DOS/machine combination available, you may wish to perform the conversion on a backup of the diskette to be converted, using the original as a 'master'.

Once the desired files have been transferred to your LS-DOS diskette, proceed as usual with the MS-Utilities.

As long as I'm on the subject of diskette formats, I'd like to clarify a point several TANDY 2000 owners have found to be a stumbling stone with the MS-Utilities. This computer was ahead of its' time, using an advanced 80186 CPU and many features that could have left the IBM machine in the dust, if not for the marketing clout of IBM. As a technological triumph, the TANDY 2000 was an unqualified success; in the marketplace it was a dismal failure.

When this machine was introduced, there was no 720K diskette format defined by Microsoft under the MS-DOS operating system. Tandy (Radio Shack), wishing to provide the TANDY 2000 purchaser with enhanced storage capabilities, therefore provided a 720K format for use with this excellent machine. (The format may have been provided by Microsoft under contract.) However, this 720K format was not the 720K format that Microsoft eventually settled on as a 'standard' under their operating system. The TANDY 2000 format uses 360 'clusters' (the minimum allocation unit, corresponding to the TRS/LS-DOS 'granule') of 2,048 bytes each. The format eventually settled on for MS-DOS for a 720K diskette contains 720 'clusters' of 1,024 bytes each. Due to the methods used in programming the MS-Utility modules to read the MS-DOS formats defined as 'standards', making changes to accommodate the TANDY 2000 format would more than double the size of each program.

Because of all this, the TANDY 2000 720K format is not supported by the MS-Utilities. However, the 360K and 180K 'standard' formats are both supported and can be read and written by the TANDY 2000, which allows the Model 4 user to transfer files between the two machines, with the file size limited only by the type of diskette drive on the Model 4: 180K for single-sided drives or 360K for double-sided drives. Since the number of TANDY 2000 owners is fairly small and the job would be quite involved, I must regretfully decline to change the MS-Utilities to support this format.
-David P. Miller

USING MENU PROGRAMS IN JCL AND BASIC

by John P. Jones

I read with interest the article by Robert D. Gore on running programs from /JCL menus. We have been using Model 1, 3 and 4 since 1978 in a business atmosphere where no one but myself understands computers (and sometimes I wonder how much I do). I find that indeed menus are the best way to go.

However, I use /JCL only for /CMD programs (like BACKUP and FORMAT, as illustrated). JCL (Job Control Language) is slow because everything is written to drive 0 as "SYSTEM/JCL" and then compiled. (Try listing SYSTEM/JCL from drive 0, if there is one, and you'll see the last /JCL you've used.) For BASIC programs it is much quicker to get into BASIC and then run all programs, including the menu, from BASIC. This is known as "chaining" and can also be done from /JCL files. If programs are extensive, I suggest a "tree" approach where the master menu calls other menus from BASIC (or /JCL). The last line of each BASIC program should then be CLOSE:RUN"Menu/bas".

I am including "Menu/jcl" and "Menu/bas" to illustrate the technique. (See program listing number four and five.)

I have used 2 letter variables, as this will run equally well in Model 3 (which is limited to 2 characters) as well as Model 4 modes.
-John P. Jones

ME AND C

by Robert Gore

I'm not but a mediocre programer. But I do enjoy pushing bits and bytes around. I've tried a number of programing languages; BASIC, Pascal, Lisp, Logo, assembly. I primarily use interpreted BASIC for most of my dabbling. I have a BASIC compiler written in BASIC, but I've never quite figured it out. With assembly language I find that although I can understand what each operation does, I can't seem to grasp how to string them together to accomplish a purpose. So I go merrily along with my interpreted BASIC for my programing efforts.

Then I began to read a lot about "C" in the computer magazines I subscribe to, including CN80. All that I read seemed to indicate that "C" was the answer to a programer's prayers. I studied the program listings given, but it appeared as gibberish to me. I asked around and everyone I talked to said I should try it, I'd like it. Well about that time I read something in CN80 that David Goben was going to bring "C" to the model

4, at least a "Small C". So I waited until it went on sale and seeing the price was right, I ordered a copy.

When it arrived, I opened the package to find three single-sided double- density disks and a red loose-leaf binder full of imposing words. I immediately formatted a couple of double-sided disks and made my backups to them. I stored away my distribution disks in my masters file. Then I hit the book. The Model 4 Small C reference Guide is 216 pages (plus addendums now) long. It is very well written and generally the points are understandable. I read through the entire manual once, then I scanned through it a second time. I was scratching my head most of the time, the little lights of understanding were not coming on very rapidly. I put "C" aside for awhile to let my brain cool off.

About the only thing I really got accomplished was to make a working disk with only the nine files required as indicated on page 159 of the manual. There are a ton of files on the distribution disks; something like fifty plus files. But the manual makes it clear that only nine are required on a day to day basis. The rest are the source code for the compiler itself and various other stuff that can be used to modify the way things are done.

Well, I read the March issue of CN80, which I'd had for awhile, but had not gotten around to reading. In there was David Goben's usual article with a section about his new Small C. He showed a small C program called "CPY/C". As I read the article, something clicked and I actually seemed to understand a bit more about it. Then in the April issue there was an article by J.F.R. Slinkman that explained some C programming concepts. Some more lights of understanding popped on. In the same issue David Goben presented another example of a C program along with a BASIC version of the same program, called FORMLTR.C. I read the articles and studied the programs closely. I actually began to think "C". This is usually how I learn, by studying examples.

In the same April issue, David Goben presented a great JCL program to automate the compiling process. Then he went one step further and presented a C program that calls the JCL. I immediately fired up the old M4D and used BUILD to enter SCC/JCL. Then I used TED to enter the CC/C program. After I saved it to the working C disk I entered DO SCC(N=CC/C:1). This proved to be a <really big> mistake. Things seemed to go well at first, but then all came crashing down when the MAC couldn't find the file to work on. I re-read the article and found that I should have entered DO SCC(N=CC:1) leaving the "/C" extension off as the compiler automatically searches for a "/C" extension. So I tried it again. It crashed again!! The crash was different this time. It started off by telling me that I'd left off a semi-colon. I had checked my write-up and knew that I had not left it off. When I listed the CC/C file I found that it had been <completely> corrupted. What happened??!! I don't know. Somehow it was the result of my erroneous first attempt to use the JCL file.

So I re-entered the CC/C source file again. This time I made a backup copy, just in case. Then I entered DO SCC(N=CC:1). The compiler worked clean and mean. In a few moments I had a new CC/CMD file on my disk. Things work good when you follow directions! However, I still don't understand how that first CC/C file got corrupted. But all worked great this time. Now, to try the new CC/CMD program I needed another program to compile. So I entered CPY/C into TED and saved it to my working C-disk. I made a backup of it, just in case,again. Then I entered CC CPY:1 and watched everything work perfectly. I ended up with a new CPY/CMD file on my disk. It even seems to work!

At this point I really started to get into C. I began to re-read the manual again and do some real in-depth studying. I looked closer at the examples and explanations. More lights on my understanding panel began to come on. I am still in this process as I write this. One day I was in the bookstore and saw a book on self-taught C for novices. It is called 'TEACH YOURSELF C' by Charles Siegel. I bought it in the hope that it would help me to understand more. I enjoy learning and opening up new horizons for myself. I hope there will be more articles on Small C in CN80. If I gain any ability with C I'll try to do an article.

Well, I finished my study of the M4 Small C Reference manual and found that I am beginning to gain a small, tenuous grasp on understanding. Then I began to read 'TEACH YOURSELF C' and the lights on my understanding panel really began to light up! You see, this book is a true tutorial on C. The M4 small C manual is not a tutorial. It is not meant to be. Although David Goben does an excellent job of writing, it still only gives brief explanations of the guts of Small C. There are only limited explanations of how to tie all these parts together to make a useful program. 'TEACH YOURSELF C' takes up where the reference manual leaves off. Mr. Siegle's book is designed for Full C on the IBM compatible, but most of it can pertain to Small C. The mention of "float", structure, and other points that Small C does not have are good to know about anyway. I found that by reading a chapter and then typing up and compiling the example programs an excellent way to gain understanding. Mr. Siegle starts you out with the "printf()" and "scanf()" functions. This is a beginning in that it lets you get stuff into the computer from the keyboard and gets a result onto the screen. Very basic and very enlightening. By the fourth chapter you have worked with three very good example programs that really do something. One is even a Tic-Tac-Toe game that is impossible to do more than reach a draw with. Mr. Siegle gives pointers on ways to make it even smarter at the game. The book goes on to teach about string manipulation, disk file handling, and a whole lot more. I am on my second reading of it and have not failed to gain some further understanding from each chapter. But I've got a long way to go before I can say I'm any good at C, small or otherwise.

I have attempted to take a C program source file from a magazine and adapt it to Small C. It is for computing the Day of the Week from a date entered on the command line. I, again using TED, entered and saved the program source file. I thought I had made the necessary changes but when I attempted to compile it, it crashed numerous times. It seems my understanding is still not up to it, yet. But I think I may learn even from this failure. I'm going to study what didn't work and find out why. This is another way I learn.

Over-all, I think David Goben did a great job on this package. It apparently is still evolving. Since I received the original package, I have received two updates to the original. I think we're on version 1.0.3 now. I must praise the manual for in most part being clear and concise. It could use a few more examples and perhaps a complete useable program to illustrate the language. I'm hoping David is writing a tutorial on C since he mentioned it once in an article. I highly recommend the SMALL C COMPILER FOR LS-DOS. I think it is very useful and interesting for anyone wanting to get into a new language.

I also highly recommend 'TEACH YOURSELF C' 2nd edition by Charles Siegle. It is an excellent tutorial. However, a couple of caveats; there are a number of textual errors in the book. Whoever did the proof reading did not do it very well. Most of the text errors can be dealt with with no problem, but some errors creep into the program listings. This can cause some problems, but in most cases I had learned enough from reading that I caught these errors before compiling the programs. The publisher should have been more diligent and presented a better book. But even with that I still recommend the book. The information it contains is invaluable to the novice C programer.

However, I'm still not convinced that "C" is the answer to this programers prayers. I find that I can do more with my good old BASIC. "C" is definitely superior in that it is complied and therefore runs much faster. But I'm having somewhat the same problem I've had with assembly language in that I understand points within the language, but I have difficulty in linking them together in a useful manner. I'll have to scan and study all the C programs I can find. I will understand "C" even if it may not be my favorite computer language.

So go for it, folks.! BASICally I'll "C" you later!
-Robert Gore

REMINDER

If the last four digits on your mailing label are 93/09, then this is your last issue. Time to get your renewal in the mail.
Moving? Remember to send us your new address.

OPEN FORUM

LTR: Dear CN80 readers:
Your not a real programer until someone complains that your work is not good enough and they have a better way of doing it. I read in CN80 that CN80 was not a battle ground and this is very true, if they started printing all the letters saying I'm a better programer than you are" it would soon destroy the magazine. If they printed just one of these "I'm a better programer than you are letters," it would never end, the person that it was aimed at would have to answer that you are not and would say something unkind and the first person would have to answer that and round and round it would go, we would never see anything about computers, just nasty letters.

I told a friend about the letter I received and he told me what I should do about it and I said no, you must be polite. But I will not get into a fight with someone's ego over who is the better programer. After all, when you send a letter saying "you didn't do it right and this is the way you should have done it." you are saying that you are the better programer, if you can write a better program then do it don't complain about it.

When I received the June CN80 I looked and found that they had printed four of my programs and I said to my housekeeper "well, look at that, they printed four of my programs", she said "that's wonderful", I said "they must of had extra room this month". You must watch your ego, not watch it get bigger but watch that it doesn't get out of hand, you must keep your ego under control, because if you don't when you walk down the street people will cross the street just so they wont have to listen to you drip your ego all over them. No one will tell you, they will just avoid you and you will wonder why and think "I had a bath this morning so its not that." No one likes to be talked to as if then are a lesser human being.
-Robert Knowles

A: We completely agree with Mr. Knowles, CN80 is not a battle ground for programmers. One of the wonderful things about computers is their ability to do a task using several different ways to accomplish that task. Anyone is interested in finding out about an easier way to do something or a shorter road to Rome. If you have one send it in, don't just send letters that complain about someone else's efforts.
-Ed

LTR: Since receiving my copy of Mark Reed's ED-IT in May. I have done the following:

Re-written all of the business /JCL files using graphic characters as described on page 5 of the ED-IT manual.

Put more Block (low res) Graphics in my Basic programs according to the same section of the manual. (Sometimes it's better for me to use Low Res because the execution time required is much less than running High Resolution.

Made HELP screens for all of my Basic Data Bases, (This helps me & new employees a lot by reducing errors.) To make a HELP screen I make a file using ED-IT. I can then display it from within a basic program with the following: SYSTEM"LIST HELP/ASC":INPUT"<ENTER> to continue";X:RUN. This routine allows one to view the HELP screen and then return to the Basic Data Base.

This is another MUST HAVE program in my book.
-J. H. B. Houston, TX

Q: I use LeScript 2.01 on my Model 4's and very occasionally LeScript 2.0 on my PC. I am having some difficulties using my latest printer an Epson LQ870 with 2.01. Particularly the margin command (MX) is a problem using K38. In Fact sometimes I use K234 (NEC P2200 my previous printer) which seems better at some things. I do not know why there should be a problem. For all the 'basic' straight forward codes the printers are identical. If you know of anybody experiencing similar problems I would like some contact with that person.
-R. S. England

DAYWEEK/BAS PROGRAM LISTING NUMBER ONE by David Goben

```
10 'DAYWEEK/BAS -- David Goben 1993. For Model 4
20 CLS:DEFSNG A:DEFINT B-Z
30 DIM DAYS(12),MONTH$(12),DAYWK$(6)
40 FOR X=1 TO 12
50 READ DAYS(X)
60 NEXT X
70 FOR X=0 TO 6
80 READ DAYWK$(X)
90 NEXT X
100 FOR X=1 TO 12
110 READ MONTH$(X)
120 NEXT X
130 DAYS(2)=28
140 INPUT"Enter year ( 1582 - )";YEAR
150 IF YEAR < 1582 THEN GOTO 140
160 IF(YEAR MOD 4)=0 AND (YEAR MOD 100)<>0 OR (YEAR MOD 400)=0 THEN DAYS(2)=29
170 INPUT"Enter month ( 1 - 12 )";MONTH
180 IF MONTH = 0 OR MONTH > 12 THEN GOTO 150
190 PRINT"Enter day ( 1 -"DAYS(MONTH)")";
200 INPUT DAY
210 IF DAY = 0 OR DAY > DAYS(MONTH) THEN 190
220 ACCUM = DAY-1
230 X=1
240 WHILE(X <> MONTH)
250 ACCUM = ACCUM + DAYS(X)
260 X = X+1
270 WEND
280 ACCUM = FIX(ACCUM + YEAR * 365.2425#)
290 ACCUM = ACCUM - FIX(ACCUM/7)*7
300 PRINT"Day of Week for "MONTH$(MONTH);DAY;YEAR": "DAYWK$(ACCUM)
310 PRINT
320 GOTO 130
330 DATA 31,28,31,30,31,30,31,31,30,31,30,31
340 DATA Sunday,Monday,Tuesday,Wednesday,Thursday,Friday,Saturday
350 DATA January,February,March,April,May,June,July
360 DATA August,September,October,November,December
```

PROGRAM LISTING NUMBER TWO by David Goben

```
/*
** dayweek.c
**
** compute day of week from user date
** NOTE: this program uses LONG/LIB
**
** Written 1993 by David Goben
*/

#include <stdio.h>
#define BACKSP 8
#define SHLEFT 24
/* days in each month */
```

Cont'd on next page.

```
int days[] = {0,31,28,31,30,31,30,31,31,30,31,30,31};

/* days of week */
char daywks[][] = {"Sunday","Monday","Tuesday","Wednesday",
                   "Thursday","Friday","Saturday"};

/* month names */
char months[][] = {"\0",
     "January","February","March","April","May","June","July",
     "August","September","October","November","December"};

/*
****************** ENTRY POINT OF PROGRAM ********************
*/
main() {
  unsigned year, month, day, dayyr, x;
  static char scratch[80];
  cls();
  while(1) {
    year = qinput("Enter year ( 1582 - )",1582,-1);
            /** COMPUTE IF YEAR IS A LEAPYEAR **/
    days[2] = 28 + (year%4 == 0 && year%100 != 0 || year%400 == 0);
    month = qinput("Enter month ( 1 - 12 )",1,12);
            /** CONSTRUCT PROMPT WITH PROPER DAY RANGES **/
    strcpy(scratch,"Enter day ( 1 - ");
    itoa(days[month],scratch+strlen(scratch));
    strcat(scratch," )");
    day = qinput(scratch,1,days[month]);
    dayyr = day - 1;  /** initialize day of year, with day/week adjust */
    x = 1;
    while(x != month)
      dayyr += days[x++];
    fprintf(stderr,"Day of week for %s %u %u: %s\n\n",
                months[month],day,year,daywks[longdate(year,dayyr)]);
    }
  }

/*
** compute day of week using 32-bit math
*/
longdate(year,dayyr) unsigned year,dayyr; {
  static int     /** 32-BIT REGISTERS **/
    lyear[2],     /* 32-bit year storage */
    longval[2],  /* general 32-bit register */
    accum[2],     /* result accumulators */
    accum2[2];

  *lyear = year;                    /* set year value to 32-bit reg */
  *longval = 365;
  longmul(lyear,longval,accum);  /* year x 365 */
  *longval = 2425;
  longmul(lyear,longval,accum2); /* int(year x .2425) */
  *longval = 10000;
  longdiv(accum2,longval,accum2);/* (divide by 10,000 to adjust decimal) */
  longadd(accum,accum2,accum);    /* int(year x 365.2425) */
  *longval = dayyr;
```

Cont'd on next page.

```
  longadd(accum,longval,accum);  /* add day of year */
  *longval = 7;
  longdiv(accum,longval,accum);  /* total / 7 */
  lremain(accum);                /* get modulo result */
  return *accum;                 /* return modulo result */
  }

/*
** clear video screen
*/
cls() {
  fputs("\x1c\x1f",stderr);
  }

/*
** get user response
*/
qinput(string,min,max) char *string; unsigned min,max; {
  unsigned response;
  while(1) {
    fprintf(stderr,"%s? \x0e",string);
    response = getval();
    if(response > = min && response < = max)
      return response;
    }
  }

/*
** get value from keyboard
*/
getval() {
  unsigned value, count;
  char ch;
  count = value = 0;

  while(1) {
  if((ch=fgetc(stderr)) = = '\n') return value;
    if(isdigit(ch)) {
      value = value * 10 + (ch - '0');
      + +count;
      }
    else if(ch = = BACKSP && count) {
      backup();
      value /= 10;
      --count;
      }
    else if(ch = = SHLEFT) {
      while(count--) backup();
      count = value = 0;
      }
    else if(ch > = ' ') backup();
    }
  }

backup() {
  fputs("\x08 \x08",stderr);
  }

/************************  END OF PROGRAM  ***********************/
```

PROGRAM LISTING NUMBER THREE by David Goben

```
/*
** CAL.C
** Display month calendar for current date or specified date
**
** Usage: CAL [dd/mm/yy]
** If yy 00-11, assume 2000-2011
** if yy 80-99, assume 1980-1999
** yy can also be specified as 1980-2011
*/

#include <stdio.h>

/* global information */
int dates[] = {0,31,28,31,30,31,30,31,31,30,31,30,31}; /* days in months */

char weeks[][] = {
  "Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday"
  };

char months[][] = {"badmonth",
  "January","February","March","April","May","June","July",
  "August","September","October","November","December"
  };

/*
** ENTRY TO PROGRAM
*/
main(argc,argv) int argc; char *argv[]; {
  int day,month,year,dayweek;

  hello();                                          /* say hello */
  getdate(argc,argv,&day,&month,&year,&dayweek); /* get date info */
  show_date(day,month,year,dayweek);                /* display date */
  show_month(day,month,year);                       /* display month */
  }

/*
** say hello
*/
hello() {
  fprintf(stderr,
    "CAL - 1.0 - 1980-->2011 Calendar Month Display Program\n"
    "Copyright (c) 1993 by David Goben. All rights reserved\n\n");
  }
/*
** gather date information
*/
getdate(argc,argv,day,month,year,dayweek)
  unsigned argc,*day,*month,*year,*dayweek; char argv[][]; {
  char date[81],*ptr;
  ptr = date;
  if(argc < 2)                          /* if no date specified by user */
    _bdos(18<<8,0,date[8]=0,date); /* get system date */
  else if(argv[1][0]=='?') {
```

Cont'd on next page.

```
    printf("Usage: CAL [mm/dd/yyyy]\n"
           "       mm = month (1-12)\n"
           "       dd = day   (1-31)\n"
           "     yyyy = year  1980-2011\n"
           "                  or 80-99,0-11\n"); exit(0);}
  else strcpy(date,argv[1]);        /* else get user date */

  *month = getval(ptr);             /* get month value */
  ptr    = skip(ptr);               /* point to next field */
  *day   = getval(ptr);             /* get day of month */
  ptr    = skip(ptr);               /* point to next field */
  *year  = getval(ptr);             /* get year value */

  if(*year < 12) *year += 2000;        /* test year data */
  else if(*year > 79 && *year < 100) *year += 1900;
  else if(*year < 1980 || *year > 2011)
    {printf("Bad year data: %u\n",*year); exit(1);}
  if(*month==0 || *month > 12)         /* test month data */
    {printf("Bad month data: %u\n",*month); exit(1);}
                                       /* compute February length */
  dates[2] += (*year%4==0 && *year%100 != 0 || *year%400==0);
  if(*day==0 || *day > dates[*month]) /* test day data */
    {printf("Bad day data: %u\n",*day); exit(1);}

  *dayweek = getdw(*day,*month,*year);/* get the day of week */
  }

/*
** get value from field
*/
getval(ptr) char *ptr; {
  int value;
  value = 0;
  while(isdigit(*ptr))
    value = value * 10 + (*ptr++ - '0');
  return value;
  }

/*
** skip to next field
*/
skip(ptr) char *ptr; {
  while(*ptr && isdigit(*ptr)) ++ptr;
  if(*ptr != 0) ++ptr;
  return ptr;
  }

/*
** compute day of week
*/
getdw(day,month,year) int day,month,year; {
  int dw,index;
  dw = year - 1980;                  /* get offset from 1980 */
  dw += (dw+3)/4 + day + 1;            /* compute days in year + leap info */
  for(index=0; ++index != month; )
    dw += dates[index];
```

Cont'd on next page.

```
   return (dw % 7);
   }

/*
** show date
*/
show_date(day,month,year,dayweek) int day,month,year,dayweek; {
   int len;
   len = (28-10)-(strlen(weeks[dayweek]) + strlen(months[month]));
   if(day > 9) --len;                    /* drop one more if days is 2 digits */
   len /= 2;                             /* compute centering */
   while(len--) putchar(' ');            /* pad with spaces */
   printf("%s, %s %d, %d\n\n",weeks[dayweek],months[month],day,year);
   }

/*
** show calendar for month
*/
show_month(day,month,year) int day,month,year; {
   int dw, week, date;
   week=((28-5)-strlen(months[month]))/2; /* figure indentation length */
   while(week--) putchar(' ');           /* indent data */
   printf("%s %d\n\n"                    /* then display calendar heading */
          " Sun Mon Tue Wed Thu Fri Sat\n"
          " ---------------------------\n",months[month],year);
   dw = getdw(1,month,year);             /* get day of week of 1st of month */
   week = dw;                            /* get number of days to space over */
   while(week--)
     printf("    ");                     /* buffer 4 spaces */
   date = 0;
   while(date++ < dates[month]) {        /* do only for days in month */
     if(date == day) printf("<%2d>",date);
     else            printf(" %2d ",date);
     if(++dw == 7)
       {dw = 0;putchar('\n');}           /* wrap around if past saturday */
     }
   if(dw) putchar('\n');                 /* send final newline if not at start */
   }

/**************************** END OF PROGRAM ***************************/
```

MENU/JCL PROGRAM LISTING NUMBER FOUR by John P. Jones

```
.Menu/jcl
.Enter per following list:
.1 Programs in BASIC
.2 Other (System Programs)
.
//keyin
//0
//abort
//1
basic
```

Cont'd on next page.

```
run"menu/bas:0"
//stop
//2
.Enter per following list:
.1 Spreadsheet (VisiCalc)
.2 Word Processing (LeScript)
.
//keyin
//0
//abort
//1
vc4/cmd
//exit
//2
Lescript/cmd
//exit
```

MENU/BAS PROGRAM LISTING NUMBER FIVE by John P. Jones

```
10 'Menu/bas - to select and run specified BASIC programs
20 'Normally run from "Menu/jcl"
30 CLS:PRINT"Enter per following list:"
40 PRINT"1. Personal Expenses":PRINT"2. Mailing List":PRINT
50 ME$=INKEY$:IF ME$=""THEN 50 ELSE ME=VAL(ME$):IF ME<1 OR ME>2 THEN 50
100 ON ME GOTO 110,120
110 RUN"Perexp/bas"
120 RUN"Maillist/bas"
```

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TRSDOS 1.3 R/S Cat # 26-0312	$ 7.00 (X)
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I/O-BUS LD INTERFACE Connect an exterior disk drive unit to your 4P or Model 4/4D, not required for the first two drives on your Model 4/4D.	$180.00 (Z)
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LP III, V	26-1414	CN1002	FABRIC CART.	6.38	5.88
LP III, V	26-1414	CN1003	FABRIC REFILL	4.79	4.29
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LP VII, DMP 100	26-1424	CN1038	FABRIC CART.	6.00	4.50
DMP 110	26-1283	CN1005	FABRIC CART.	6.58	6.08
DMP130/130A/132/133/107	26-1236	CN1006	FABRIC CART.	6.40	5.90
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DMP 120, 200	26-1489	CN1010	FABRIC REFILL	4.85	4.35
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DMP 2100, 2100P, 2110	26-1442	CN1016	FABRIC REFILL	4.85	4.35
DMP 2120	26-2834	CN1017	FABRIC CART.	13.05	13.05
DMP 2120	26-2836	CN1018	FABRIC REFILL	7.90	7.40
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DWP II, DWP 410/510	26-1419	CN1020	MULTI-STRIKE CT.	5.35	4.85
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DWP 520, 230, 210	26-1458	CN1027	FABRIC REFILL	4.80	4.30
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DWP 220	26-1299	CN1029	M-S REFILL	3.60	3.10
DMP 300/2102	26-2819	CN1030	FABRIC CART.	7.15	6.65
DMP 300/2102	26-2819	CN1031	LONG LIFE CART.	6.85	6.35
ALPS ASP-1000	900-2326	CN1032	FABRIC CART.	6.60	6.10
EPSON FX/MX/RX-80	900-2327	CN1033	FABRIC CART.	5.50	5.00
EPSON LX/80/90	900-2328	CN1034	FABRIC CART.	5.00	4.50
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PANASONIC KXP1090	900-2331	CN1036	LONG LIFE CART.	7.35	6.85
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DMP 500		CN1043	FABRIC REFILL	5.30	4.80
DMP 430		CN1044	FABRIC REFILL	5.60	5.10
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ALL RIBBONS ARE BLACK, CART.= Plastic Cartridge, REFILL= Refills Only/No Cartridge.

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1 to five items add (Y) .... 6 or more items add (Z)
Please refer to the CN80 Product Guide Shipping and Handling Schedule.

Some ribbons for the older Radio Shack printers are not stocked, but are still available by special order, please allow an additional week shipping time. All stock ribbons are shipped within 24 hours from the time the order is received. C.O.D orders accepted. Government and educational institution purchase orders are accepted. Sorry, we do not accept credit card orders.

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from Computer News 80

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ROMCLOCK4 OR ROMCLOCK3
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by David Goben

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Complete program and manual.
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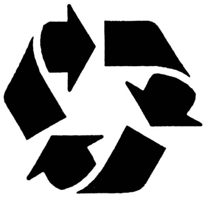

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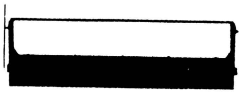

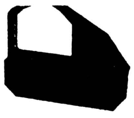

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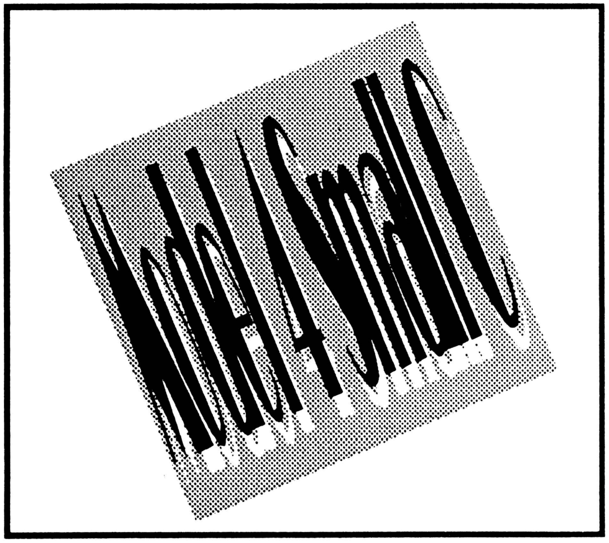

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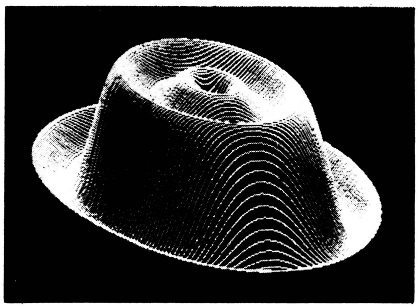

Superior Hardware. The Grafyx Solution provides 153,600 pixel elements which are arranged in a 640 × 240 or on the Model III a 512 × 192 matrix. Hundreds of new business, personal, engineering, and educational applications are now possible. The hi-res display can be shown on top of the standard display containing text, special characters, and block graphics. This simplifies program debugging, text labeling, and upgrading current programs to use graphics. The Grafyx Solution fits completely within any tape or disk based Model 4, 4D, 4P, or III. Installation is easy with the plug-in, clip-on Grafyx Solution board.

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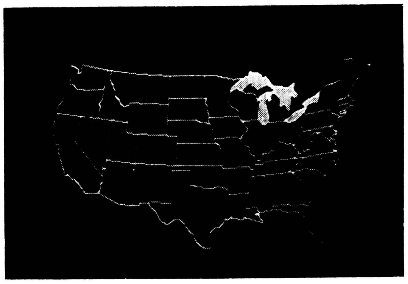

Superior Software. The board comes with over 40 programs and files which make it easier to use, serve as practical applications, demonstrate its capabilities, and serve as programming examples. The software works with TRSDOS 1.3, 6.1.2, 6.2, 6.3; Dosplus 3.4, 3.5, 4; LDOS; and Newdos80. The Grafyx Solution is also supported by 30 optional applications programs: Draw, Bizgraph, xT.CAD, 3D-Plot, Slideshow, Mathplot, Surface Plot, Chess, etc.

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$ 99.00 Add (Z) S&H

Specify Model 3, Model 4p,
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Model 4 Non Gate Array
when ordering. The boards
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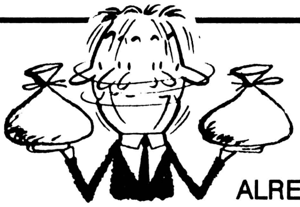
Please include phone number.



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Programs by David Goben

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T62DOSXT: For **TRSDOS 6.2.x.** Still use TRSDOS 6.2 but want to re-enable the dating? T62DOSXT will patch your system to take TRSDOS 6.2 through the end of 1999. Something that LSI, the DOS's creator said was impossible. ***FULL*** compatibility with the date format of LS-DOS 6.3. Includes numerous optional system enhancement patches. Also features **DATECONV** to upgrade disks to the new format. **ONEPASS** for disk duplication. Plus more! Unlike other patches, this package is *safe* with older disks that have not been converted. Use **T62DOSXT** with *complete* confidence. **$18 + S&H.**

PACK: For **TRS-80 or MS-DOS.** Pack, unpack, compress, or superpack your BASIC programs for faster operation and more efficient use of disk space. The TRS version contains both Model I/III and 4 versions. MS-DOS version requires DOS version 2 or higher. Please specify computer system when ordering. **$17.95 + S&H.**

DEA: *The Disk Editor/Assembler.* The *most powerful* integrated editor/assembler ever written. Contains both Model I/III and 4 versions. Has more enhanced features than any other. Conditional assembly, long label names, and abundant powerful math functions that are lacking in other packages. Reference addresses in, or include code from other disk files while assembling programs. These are only a small part of its many powerful features. The **DEA** package also includes a disassembler, cross reference utilities, and plentiful programming examples. **DEA** was used to write ***EVERY*** program listed in *Computer News 80* by David Goben, including **BCX, MagicDraw, Symphony 90, Diskopt, SCRIPT,** and *all* the others!

DEA: *Making Assembly Language Accessible.* **$49.95 + S&H.**

High Resolution Programs by David Goben

Available *only* from *Computer News 80*

MagicDraw: *Making screen design easy.* For **Model 4/4p/4d with a hi-res board and a serial mouse with mouse driver software.** No high resolution Computer-Aided Drawing program has ever been like it. Nothing comes close to the speed, ease of use, and the power offered by **MagicDraw.** ***NONE!*** If you thought drawing on the hi-res screen was too cumbersome or too difficult and that you would have to leave that kind of work to others with more experience, then *think again.* **MagicDraw** is as close to buying hi-res experience as you can get.

MagicDraw offers you *dozens* of features more than its nearest competitor. It also offers you a menu selection system that was said to be totally out of reach of a TRS-80. *Wrong!* Choosing the right tool for the job has never been so easy. No more going to help screens or digging through manuals to remember a tool's selection command; with **MagicDraw** you can do so right from an easy-to-use menu.

MagicDraw: *Realizing dreams.* **$65 + S&H.**

Hi-Res Utilities Package: for **Model 4/4p/4d with a hi-res board.** Take control of your hi-res artwork with this group of 10 utilities. These are the fastest hi-res utilities ever written. **HRLOAD** will load a high resolution screen file in a fraction of the time of its nearest competitor. It will load the normal **HR** files, the "crunched" **CHR** files, and super crunched **SHR** files. **HRSAVE** allows you to save hi-res screen in **HR, CHR,** and **SHR** format. **HRFXPRT** allows you to dump the hi-res screen to an Epson-compatible printer with an *incredible* variety of resolutions. **HRIBMPRT** dumps to an IBM ProPrinter-compatible printer. **HRLSRPRT** dumps to a LaserJet+ compatible printer or DeskJet printer. Seven sample files included. Other utilities allow you to clear, flip, view and shrink the screen. Take the difficulty out of processing your hi-res screens. **$15 + S&H.**

Postmaster Support Utilities: For **Model 4/4p/4d with a hi-res board and with *POSTMASTER*.** Enhance your work with David P. Miller's fantastic ***POSTMASTER*** program with this set of utilities. **MAKEICN** allows you to *capture* a portion of the screen and convert it into a ***POSTMASTER*** icon. 3 capture box sizes allows you to capture larger portions of the screen and shrink them down to icon size, if you wish to. **ADDICN** allows you to add a captured icon to a library file, which ***POSTMASTER*** can use to choose from several icons. **DSPICN** allows you to view the icons you captured. **DSPLIB** displays your ***POSTMASTER*** icon libraries. **DECDFON** and **DECDBOR** allows you to *decode* ***POSTMASTER*** font and border files so that you can edit and customize them using any text editor or word processor that can process ASCII files, such as **SCRIPT** or **EDIT-4** (both available from CN80). **ENCDFON** and **ENCDBOR** allows you to *encode* ASCII files of your own creation, or *back* into font and border files to make them usable by ***POSTMASTER***. **ADDFON** and **ADDBOR** allow you to combine font and border files into libraries for use by ***POSTMASTER***. Other utilities included, along with sample files. **$39 + S&H.**

POSTMASTER 24: for **Model 4/4p/4d with a hi-res board and with *POSTMASTER*.** This filtering program allows you to print your ***POSTMASTER*** printouts on a 24-pin Epson-compatible printer (such as CN80's Seikosha SL-90) with super sharp ***laser quality.*** Works transparently to the rest of the system, loading right along with ***POSTMASTER***, and even removing itself when you are done with ***PM***. This is a utility that has to been seen to be believed! **$15+ S&H.**

FAST System Utilities

By **David Goben**, & *only* from *Computer News 80*

Fbackup: The ***fastest*** file-by-file backup utility ever written for the Model III or Model 4/4p/4d. Designed for LDOS 5.3, TRSDOS 6.2, or LS-DOS 6.3 It's a whopping **8 TIMES FASTER** than the BACKUP/CMD program supplied with these Disk Operating Systems. Plus it has many new features: *alphabetized backups, single drive file-by-file backups*, and *more*. It will even tell you how many disks you will need. This program has to be seen to be believed. Specify Model III LDOS 5.3 or Model 4 TRSDOS 6.2/LS-DOS 6.3 on order. $15 + S&H.

Fastback: The ***fastest*** hard disk backup utility ever written for the Model III or Model 4/4p/4d. No other hard disk backup or archiving utility is faster. ***NONE!*** Don't be fool by another's claims. Selectively backup or restore files, alphabetize, even see how many disks a backup will require. As easy as **FBACKUP**, but made for those large files that normal backup disks would not be able to hold. Designed for LDOS 5.3, TRSDOS 6.2, and LS-DOS 6.3. Specify Model III or Model 4 on order. $29.95 + S&H.

Fformat: This is the ***fastest*** disk formatting program ever written. Formats a 180K disk in 18 seconds! Works like FORMAT, but with greater versatility and speed. It can even apply high level formats and verify hard disks in one step -- no more fumbling with more than one utility. A PURGE parameter allows you to reformat disks in a flash. Format 80-cylinder 2-sided disk with ease with the BIG parameter. Designed exclusively for LDOS 5.3, TRSDOS 6.2, and LS-DOS 6.3. Specify Model III or Model 4 on order. $15 + S&H.

Word Processing

by **David Goben**, & *only* from *Computer News 80*

Script: Word processor for the Model III and 4/4p/4d. ***Not*** a patch program. This is a *complete* word processor with all the features made famous by SCRIPSIT, *plus* dozens of new amenities. Powerful editing, formatting, and printing features you would expect only from packages costing much, much more. A poor person's word processor that produces professional results. Specify computer and DOS when ordering. $37.95 + S&H.

Script Spelling Verifier: For Model III and 4/4p/4d. A *powerful* spelling checker/corrector for **SCRIPT**, Disk SCRIPSIT, ALLWRITE, ASCII, TED, and other ASCII format files. Features over 75,000 words. Add up to 17,000 more words to an additional custom dictionary. Specify computer and DOS when ordering. $37.95 + S&H.

SuperScripsit Spelling Checker: For Model III and Model 4/4p/4d. Add spell checking / proofreading capabilities to SuperSCRIPSIT. Fully integrates into the word processor. *Easy* to install. Specify computer when ordering. $37.95 + S&H.

Model 4 Spreadsheets

Written by **David Goben**

Available *only* from *Computer News 80*

BCX: *The Business Calculator for Extended Memory Model 4's.*

The spreadsheet for the 90's. For Model 4 128K+. Called by its users the *friendliest* and *fastest* spreadsheet ever written for the Model 4. **No** Model 4 spreadsheet calculates faster than **BCX**. It is so fast that users have become used to keeping the automatic update feature on at all times; something you would *never* want to do with VisiCalc or Multiplan. **BCX** can calculate sales projections, income taxes, personal budgets, cost estimates, engineering changes, balance your checkbook, plus ***thousands*** of other applications. Whatever you need tabulated or computed, **BCX** can do! Play "what if" with your spreadsheets to figure your best strategies; **BCX** will remember your calculations so that when you make changes that will affect other cells, the entire spreadsheet can be *quickly* and *automatically* updated to reflect those changes, no matter how many or how drastic.

Among its numerous features are:

- **Support of up to *1 megabyte* of memory**
- **A huge 64 x 256 cell matrix (16,384) to accommodate any needs**
- **Powerful, complete set of trigonometry functions for engineers**
- **Powerful automatic table look-ups**
- **Range math that transcend simple column or row limits**
- **Read and use VisiCalc sheets with little or no change**
- **Read and use Busy-Calc sheets without changes**
- **On-line, detailed quick reference windows to jog your memory**
- **Pop-up command windows in *plain* English; no trick keywords**
- **Fastest screen scrolling of any spreadsheet**
- **Powerful printer options to set up any printer**
- **Huge hand-holding hands-on tutorial to help you master BCX**
- **Many powerful replication and data manipulation features**
- **A handy quick reference and a complete reference manual**

and *many more* capabilities. Has all the features users wished VisiCalc and Multiplan had. With all this power, why settle for anything less?

BCX: *The way spreadsheets should be.* $109 + S&H

Demo disk available for $15. Good toward purchase of full program.

Busy-Calc: *The Family & Small Business Spreadsheet.*

For Model 4 64K+. An economical, yet powerful and *extremely fast* spreadsheet for those who do not need huge layouts. A comfortable 64 x 64 cell matrix with powerful function, math, and reference support. Can support up to 4 banks of extended memory if you have it, though not necessary. Has most of the features of **BCX**, though simpler in structure and thus easier to use.

Busy-Calc comes complete with a reference manual featuring an extensive hand-holding, hands-on tutorial. A quick reference manual is included when you just need a refresher.

Busy-Calc: *Making spreadsheets easy.* $79.95 + S&H

Demo disk available for $10. Good toward purchase of full program.

Still More Programs by David Goben

Available only from *Computer News 80*

Model 4 Small C: **For Model 4.**

Program in the language of the 90's without having to memorize huge volumes of complicated manuals. Small C is a large, almost complete subset of the C programming Laguage, and ***much*** more powerful than any other Small C package previously released for CP/M or MS-DOS. C is quickly becoming the programming language of choice by beginner and vetran programmers alike. See what it's all about without it costing you and arm and a leg. The package comes complete with the Small C compiler, program optimizer, macro assembler, and linking loader, plus other programs. What's more, the ***complete*** source code for all these files (except for MAKE/CMD) is included in this package, including the ***libraries***. More than that, ***all*** these files are written in Small C! So see by real-world example practical Small C programming! Complete with 225 page reference. **$45 + S&H**

Disk Optimization Package: **For Model 4.**

Quickly defragment the files on your disks or hard disks, and optimizes their storage space. Super fast operations for quick results. During normal everyday operations, you delete, create, and expand or compress files. This causes files to be broken up into several different locations on a disk. This results in slower access to your files. The included ***DIRCHECK*** program will test your drive for errors, and fix most that you may have thought were fatal. The included ***TESTFRAG*** tests a drive to see if files exist that are fragmented. ***DISKOPT*** will defragment your files, and optionally compress the disk space, to prevent easy fragmentation of files yet to be added to the drive. Full and complete support for Model 4 SubDirectories (below) included! Uses extended memory if available for even faster operation. An essential utility especially for hard disk owners. **$29.95 + S&H.**

SubDirectory Utilities: **For Model 4.**

Totally eliminate the 256-file limit of a disk drive with this set of utilities. Create *additional* directories that are subordinate to a disk's normal directory, or create whole branched systems, placing only related files in each SubDirectory. This set of utilities ***DO NOT*** create large, cumbersome files on your disks. Each SubDirectory takes up only a ***very small*** amount of disk space. These SubDirectories instead share the main directory allocation map, making large support files totally unnecessary. Even create SubDirectory trees on a floppy disk! Especially handy for hard disk users who are too often plagued by running out of file "slots" in a drive ***long*** before they run out of drive space. An essential utility for those who must keep huge repositories of files, or those who would prefer to keep related programs/files in separate niches. The SubDirectory Utilities is your answer. **$19.95 + S&H**

SuperSPOOL: **For Model 4.**

Increase your productivity by decreasing the time you spend waiting for your printer to finish. Allows printing in the "background" while you go on with your other computing tasks. Unlike the Model 4 SPOOL utility, **SuperSPOOL** will take advantage of all your extended memory, even if you have non-standard add-ons that have patched the DOS to support 32K banked blocks. Can use up to 1 Megabyte if you have it. On a standard 128K Model 4, this gives you a 64K printer buffer. Also unlike the DOS's SPOOL utility, **SuperSPOOL** will not lock up your computer and lose its data if the PAUSE feature is on. Even further, **SuperSPOOL** can load into *low memory*, so that those programs that cannot run with high memory routines present will operate. Using **SuperSPOOL** is like buying an expensive printer buffer device, but does not take up valuable desktop space, and costs a whole lot less. Set your printer free with **SuperSPOOL**. **$15 + S&H**

TRANSFER FILES BETWEEN

Model 4/4P/4D and MS/PC

MS UTILITIES BY DAVID P. MILLER

Transfer files quickly and easily between your Model 4/4P/4D and IBM-PC Clones.

Transfer files from MS-DOS formatted disks to TRS/LSDOS formatted disks, or from TRS/LSDOS to MS-DOS formats on your Model 4 or 4P/4D.

Read MS-DOS formatted disk directories or format MS-DOS disks with your Model 4/4P/4D. Add linefeeds or strip linefeeds as needed.

$30.00 Plus S&H

System Requirements: MS-Utilities only operates on the Tandy Radio Shack Model 4/4P/4D Computers using TRSDOS 6.2.x or LS-DOS 6.3.x operating system. It will read and transfer files stored on a disk formatted with LDOS 5.x. and TRS/LSDOS 6.3.x.

DAVE'S MOUSE MENU

By David P. Miller

Build a up to twenty six DOS command menu with the ability to repeat the DOS command by pressing a keyboard letter, pressing the arrow keys to "point and shoot" or use your mouse for "point and shoot" selection.

No longer do you have to memorize DOS commands and parameters that you use all the time. Simply type them in once and then select them from the menu.

Fully compatible with the use of a mouse, keyboard or arrow keys.

$ 15.00 Plus S&H

David P. Miller is the author of PostMaster

Refer to March 1993 CN80 (Vol. 6 No. 3) for more information about Dave's Mouse Menu.

HOWE SOFTWARE FOR MODEL I, III AND MODEL 4/4D/4P

Published and Distributed by Computer News 80

TYPITALL Word Processor $ 49.95

Word processor upwardly compatible with SCRIPSIT -- it reads your old SCRIPSIT files and uses the same formatting and cursor movement commands. Send any control/graphics character to the printer. Print formatted text on the screen, or send it to a disk file for later printing. Merge data from a file during printing. Assign any sequence of keystrokes to a single control key. Call up to 16 help screens at any time. Move cursor forward or backward by character, word, line, paragraph or page. Complete with easy to read manual.

TYPITALL Word Processor with Spelling Checker $ 79.95

Optional spelling checker has 29,500 word dictionary -- verify a 3.500 word document in less than two minutes.

SYSTEM DIAGNOSTIC $ 69.95

Complete tests for every component of your TRS-80 Model 1, 3, or 4 (separate versions for each model). **ROM**:checksum test. **RAM**:three tests. **Video Display**: character, video RAM, signal. **Keyboard**: every key contact tested. **Line printer**: character tests. **Disk Drives**: disk controller, drive select, track seek, read sectors, formatting, read/write/verify data with or without erasing, disk drive timer, disk head cleaner. Single/double density, single sided or double sided drives from 1 to 99 tracks. **RS-232-C Interface**: connector fault, data transmission, framing, data loop, baud rate generator. - Specify version when ordering.

SMART TERMINAL $ 19.95

The intelligent telecommunications program for TRS-80 Model 1, 3, 4 or 2/12 CP/M. Memory buffer for sending and receiving file. Automatic transmission and reception of data. Character translations, true **BREAK** key, and help screens.

HOWE SOFTWARE FOR TRS-80 AND MS-DOS SYSTEMS

SMALL BUSINESS ACCOUNTING WITH PAYROLL $ 99.95

Based on the Dome Bookkeeping Record #612, this program handles bookkeeping and payroll for a small business. Bookkeeper provides single entry ledgers for income and expenses, computes monthly and yearly summaries. Payroll handles up to 99 employees, with automatic deductions of F.I.C.A. and Federal income tax. State tax and three optional deductions also included. Prints payroll and expense checks, Form 941 reports and W-2 Forms.

MAILING LIST $ 79.95

Create and maintain mailing lists of up to 32,767 names and addresses. Up to five-line entries, including title, first and last names, optional second line, address, city, state, zip code, optional fifth line and telephone number. Sort or search for names by any field. Prints labels in 1, 2, 3, or 4 adjustable columns or on envelopes. Print form letters with any substitutions.

HOME BUDGET and CHECKBOOK ANALYST $ 49.95

A complete checkbook program combined with budget comparisons, income and expense analysis, and projections. Computes current checking balance. Also handles non-check expenses, bank debits, and income. Monthly and year-to-date summaries, yearly projections based on data up to a known month.

SMALL BUSINESS MANAGEMENT SYSTEM $ 149.95

A complete **point-of-sale** program for a small business. **Order desk** handles order entry, invoicing. Includes 1,999 8 character part numbers. **Bookkeeper** maintains general ledger. **Inventory** produces sales reports. **Installation** sets program to your business.

ADD SHIPPING AND HANDLING TO ABOVE PRICES

IDIM BULLETIN BOARD HOST SYSTEM

by Leonard Lorden

IDIM (I DID IT MY WAY) Bulletin Board Host System is a completely new software system written for the Model 4 computer. It comes with a 22 page manual with full instructions and three disks of programs for setting up your own bulletin board.

$ 60 plus Shipping and Handling.

VH/LIB By Richard VanHouten

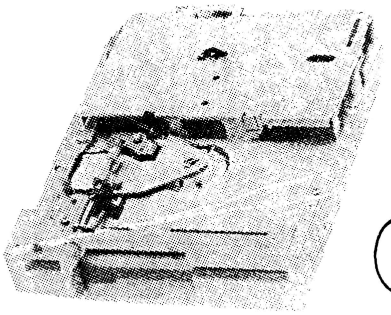
LIBRARY OF SMALL C FUNCTIONS

Features Wildcard directory Searching, low and high resolution graphics routines (with emphasis on the high resolution routines) and mouse interface routines. It is a must for anyone programming in Small C on the Model 4.

$19.95 plus Shipping and Handling

CHINON 5.25" Floppy Disk Drive

Low Power Consumption Plus High Performance



CUSTOM IC design in the read/write and control circuits gives maximum performance and low power consumption. A pop-up mechanism protects against **mischucking upon disk insertion**, allowing disks to be loaded/unloaded with ease. **Chinon 5.25" floppy disk drives** provide high speed access (3 ms).

DOUBLE SIDED HAlf HEIGHT DRIVES
Install in any Model 3/4/4P/4D

CHINON 3.5" Micro Floppy

High Storage Capacity

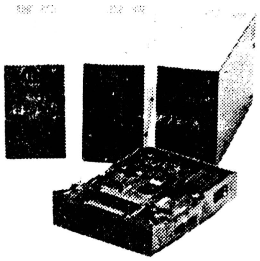
Internal Half Height 5-1/4" 720K & 1.2 meg	$ 89.95 (Z)
*This drive can not be used in a Model 4 Computer.	
Internal Half Height 3-1/2" 720 & 1.44 meg	$ 79.95 (Z)
*This drive can be used in a Model 4 Computer.	
Internal Half Height 5-1/4" 360K	$ 67.00 (Z)
*This drive can be used in a Model 4 Computer.	

Cables to connect internal drives	$ 10.00
Half Height filler plates	$ 4.00

*No S&H for cables and filler plates when ordered with drives.

- One Year Manufacturer's Warranty

Need more information? We welcome your calls.



EXTERNAL DISK DRIVES

From

Computer News 80

These external disk drives come in a metal case with power supply, power cord, and 4 ft. drive cable which plugs into the external disk drive connector on your computer. External disk drives are shipped complete via UPS ready for you to use, just plug them in and run. Plus you get our full support and two year warranty.

Add convenience and 720K storage space
with 3-1/2 disk drives to your system.
Complete with all cables ready to go
at one low price.
FULL TWO YEAR WARRANTY
On all parts and labor.

ALL DISK DRIVES ARE HALF HEIGHT DOUBLE-SIDED DRIVES

One disk drive unit........................$ 143.00
with one 5-1/4 360K
or 3-1/2 720K unit.

Two disk drive unit........................$ 193.00
with two 5-1/4 360K drives
or two 3-1/2 720K drives
or one 5-1/4 and one 3-1/2 drives.

Add $ 6.00 Shipping and Handling in the US only, all others contact us for shipping costs.

CHECK OR MONEY ORDER, NO CREDIT CARDS

Sixteen Model 4 Programs!

Mark Reed's Model 4 Utility Disk now contains 16 useful utilities for every Model 4 owner:

- **CLOSE**, to close all open files on a disk;
- **CMDEDIT**, to provide command line editing and recall at "DOS Ready";
- **CMDINST**, to install CMDEDIT on the system disk in drive zero;
- **CMDSTORE**, to install CMDEDIT's special high memory storage area;
- **DSP**, to display control codes and graphics characters;
- **MAPMEM**, to list all low and high memory modules;
- **MOVE**, to transfer files from one drive to another;
- **PRINT**, to format and print text files;
- **PRT**, to print control codes and graphics characters;
- **RECLAIM**, to remove unused high memory modules;
- **SETMOD**, to set or reset files' MOD flags;
- **SETVIS**, to make files visible or invisible;
- **SWAP**, to exchange disk drive numbers;
- **UNFILTER**, to remove a filter from a device without resetting the device;
- **VLOAD**, to display specially formatted disk files; and
- **VSAVE**, to save the display to a specially formatted disk file.

The Utility Disk comes with a help file, a 23-page manual, and full support from the author. Order your copy today for only $14.95 (plus shipping and handling) from *Computer News 80*, P.O. Box 680, Casper, WY 82602-0680.

Introducing
ED-IT for the Model 4
by Mark Allen Reed

For TRSDOS 6.2 or LS-DOS 6.3. ED-IT is a brand new full-screen text editor that combines power, versatility, and ease of use. Its features include fast operation, a large text buffer (nearly 47K with no high memory modules installed), an easy-to-use menu system (activated by the <BREAK> key), three special programming modes (for assembly language, BASIC, and C), word-wrap capability, block operations (including delete, copy, move, save, and load), search operations (including find, change, change to the end of the file, repeat last find or change, and jump to specific line number), and the ability to enter any ASCII character into the document. ED-IT also allows you to execute nearly any DOS command without leaving the editor or affecting the text buffer. You can view a disk directory, purge unwanted files, even FORMAT and BACKUP from within ED-IT!

ED-IT is powerful enough for a programmer, yet simple enough for the casual user. It is excellent for editing README files, patch listings, and job control language (JCL) files. ED-IT comes with a complete instruction manual and full support from the author. Order your copy today for only $17.95 (plus shipping and handling) from *Computer News 80*, P.O. Box 680, Casper, WY 82602-0680.

Symphony 90

Opening a new era of TRS-80 Computer Generated Music

Use the full power of your Model 4
Free Music Library Catalog with each order
for Player or Composer System
Plus a Limited Time Offer of
Free Menu Disk and Music Library Disks

Symphony 90
Music Library Catalog
Complete Catalog of Symphony 90
Music on Disks Ready to use with
the Symphony 90 Play System
$3.00 - Shipping & Handling Included

The PLAYER SYSTEM will play preprogrammed music files from the Symphony 90 Music Library or Orc-90 files. The Library Menu disk allows you to select and play all the files on a disk, or play one at a time. The COMPOSER SYSTEM allows you to write and edit your own music files. Together both Player and Composer give you a complete music system that allows you to listen to prewritten music files or to compose your own music files. But, if you only want to listen to a great variety of music compositions, then purchase only the Player System. Model III versions are also available if you do not have a Model 4.

Symphony 90
Player
Music Player Only System

Symphony 90
Composer
Music Composer System

Symphony 90 Interface with built-in amplifier and volume control. Use with your stereo amplifier and speakers, Or use with your headphones or separate speakers from the built-in amplifier.

Interface sold only with the Symphony 90 Composer or Player software. The interface is not sold separately
See Product Guide for prices.

ARRANGER II

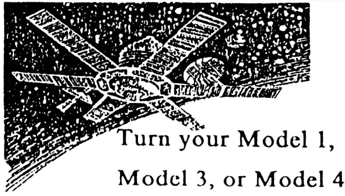
100% Machine Language Disk Index Program for the TRS-80 Model I, III, 4/4D/4P
Automatically recognizes all major TRS-80 disk operating system formats.

The ARRANGER II written by Dan Foy almost ten years ago, is a master index system that automatically records the names of your programs, what disks those programs are on and the type of disk operating system the disk was formatted under.

Program Capacity	11,000 programs optimum, 8,000 typical, 255 filenames per disk, 255 disks per library data file.
Disk Drive Compatibility	Reads 5-1/4" or 3-1/2" single-sided or double-sided; 35, 40, 80 track, and is auto self-configuration.
Functions	Add Delete Scan View Find (Search) Print Rename Change Update Toggle Locate Manual Backup Exit
Printouts	Prints out three column 8-1/2 x 11 pages with your programs listed in alphabetical order or by extensions. Prints labels with Disk:name, DOS type, and Type of disk, (system or data.)
System Requirements	Model I/III/4/4P/4D with one or more drives and 48K or more.

The greatest aid to keeping track of your disk library ever created for the TRS-80 computers. Your programs are printed in easy to read vertical alphabetized columns, unlike the horizontally alphabetized rows of the CAT program. You keep all your library on one disk in one library regardless of their DOS format type.

$39.95 Add (Z) S&H



Turn your Model 1,
Model 3, or Model 4/4P/4D
In to a Programmable
Calculator with

ASTROCAL

by VERNON B. HESTER

Designed for the student, or professional Engineers, lab technicians, accountants, real estate brokers, designers, anyone who does repetitive or complex mathematical calculations.

10,000 Program Storage Location, 84 Labels, 100 Addressable Memory Registers, True Algebraic Entry.

This unique product intergrates mathematical programming functions in to a single convenient application. Develop scientific, financial and statistical programs with ease.

$29.95 Add (Z) S&H

MOUSEDOS

by Leonard Lorden

Load MOUSEDOS (Mouse Plus by David Goben is required) and select an icon from the screen display. Disk Drive Icon, displays a new menu and mini-keyboard. Write your command line. Utility Icon, displays several DOS commands and utility icons, click the mouse on the desired command icon or click the Exit icon to return to the main menu.

Included are icons for AUTO, BACKUP, BOOT, CONV, COPY, FILTER, FORMAT, FORMS, LINK, LIST, REMOVE, RENAME, RESET, ROUTE, SET, SETKI, SPOOL, SYSTEM, VERIFY.

Fancy in appearance, easy to understand and use. A must for mouse users. $ 25 plus S&H

Disk Operating Systems

TRSDOS 1.3 disk only no manual	$ 7.00
LS-DOS 6.3.1 Upgrade disk with mini manual.	$ 39.95
LDOS 5.3.1 Upgrade disk with mini manual.	$ 39.95

Operating System and Manual.

TRSDOS 6.2.1 New original TRSDOS manuals and system disks.	$ 45.00

TRS-DOS 6.x Manuals Only

Model 4 Disk Owners Manual (Used copies no operating system disks)	$ 20.00

Plus S&H

SEIKOSHA SP-2400
9 Pin Printer

80 Column Printer
300 Characters Per Second
IBM and Epson Compatible
Standard Parallel Interface
Built-In Push Tractor & Friction Feed
Easy Front Panel Controls
Paper Parking
Graphics
Two year Manufacturer's Warranty

$ 179

Add $ 6.00 S&H, Shipped by UPS only.

Fully supported by CN80 and completely compatible with PostMaster, Rembrandt, Long and Loud and all the programs, published by CN80. Will work with any Model III/4,4P or 4D computer.

SP2400 Ribbons
CN1041 $6.40 ea. $5.90 six or more.
SL-90 Ribbons
CN1046 $7.25 ea. $6.75 six or more.

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24 Pin Printer

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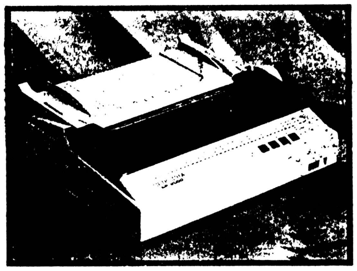

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PostMaster

Computer News 80

PostMaster by David P. Miller is a program that lets you create Posters, Letterheads and Mailing Labels with icons, borders, and many different character fonts using your dot matrix printer. The program runs on TRS-80 Model 4/4P/4D, with 64K or 128K of memory that has a MicroLabs or Radio Shack high resolution board installed.

This program has received the highest praise from reviewers of any program ever written for the Model 4. It allows you to use thousands of icons, borders, and fonts that are available from the File Cabinet Icon Library, it also allows you to add your own icons, borders and fonts.

Printers supported: Radio Shack DMP-130, -130A, -131, -132, -133, -430, -2100P, also any Radio Shack DMP printer with a 3-digit number with "3" as the second digit. All Epson and IBM printers. All other dot matrix printers that are Epson and IBM emulation printers. Seikosha SP-2000, -2000Plus, -2400. Okidata Microline 182 and 192. Panasonic KX-P1091, -1092, -1124, nonsuffixed. Star 10X, -15X, -NP, -NX, LC-10. C-ITOH 1510, 8510, C-130. (Note - Dot Matrix printers providing 300-dpi or 180-dpi may not work with PostMaster and no guarantees can be made concerning them.

Printers that are not supported are: Radio Shack DMP-110, -120, -400, -500, -2100. Panasonic suffixed printers 1124i, 1124e, etc. Okidata 82, 92, and Daisy wheel printers.

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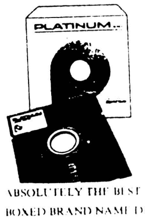

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